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Europäisches
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Département à
La Haye
Division de la
recherche

☐ HOFFMANN - EITLE
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19. Sep. 2003

HOFFMANN · EITLE, MÜNCHEN
PATENTANWÄLTE RECHTSANWÄLTE

Datum/Date

16. 09. 2003

Zeichen/Ref./Réf.

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Anmeldung Nr./Application No./Demande n°/Patent Nr./Patent No./Brevet n°.

01120773.5

Anmelder/Applicant/Demandeur/Patentinhaber/Propriétaire/Titulaire

MITSUI CHEMICALS, INC.

COMMUNICATION

The European Patent Office herewith transmits

- ☒ the European search report
- ☐ the declaration under Rule 45 EPC
- ☐ the partial European search report under Rule 45 EPC
- ☐ the supplementary European search report concerning the international application under Article 157(2) EPC relating to the above-mentioned European patent application. Copies of the documents cited in the search report are enclosed.

The following specifications given by the applicant have been approved by the Search Division :

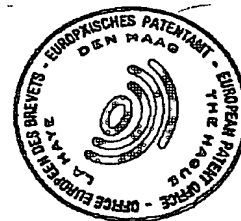
- ☒ Abstract ☒ Title ☐ Figure
- ☐ The abstract was modified by the Search Division and the definitive text is attached to this communication.
- ☐ The following figure will be published with the abstract, since the Search Division considers that it better characterises the invention than the one indicated by the applicant.

Figure:

- ☒ Additional copy(copies) of the documents cited in the European search report.

REFUND OF THE SEARCH FEE

If applicable under Article 10 Rules relating to fees, a separate communication from the Receiving Section on the refund of the search fee will be sent later.



EPO Form 1507 02.93



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	AHJOPALO L ET AL: "Molecular modeling of metallocene catalyzed copolymerization of ethylene with functional comonomers" EUROPEAN POLYMER JOURNAL, PERGAMON PRESS, LONDON, GB, vol. 35, no. 8, August 1999 (1999-08), pages 1519-1528, XP004362333 ISSN: 0014-3057 * page 1519 - page 1528 *	1-3,10, 11,13,14	C08F210/02 C08L23/00 /(C08F210/02, 216:12)
D,X	P. AALTONEN ET AL: "Synthesis of Hydroxy Group Containing Polyolefins with Metallocene/Methylaluminoxane Catalysts" MACROMOLECULES, vol. 29, - 1996 pages 5255-5260, XP002228559 * page 5255 - page 5259 *	1-3,10, 11,13,14	
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X	WO 97 42236 A (DSM NV ; PIETERS PAULUS JOHANNES JACOBUS (NL); TOL MAURITS FREDERIK) 13 November 1997 (1997-11-13) * claims; examples *	1,3,10, 11,13,14	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 4 September 2003	Examiner Kaumann, E
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.82 (P04C01)



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	WO 97 11098 A (BOREALIS AS ; LOEFGREN BARBRO (FI); AALTONEN PAEIVI (FI); KNUUTTILA) 27 March 1997 (1997-03-27) * claims; examples; tables *	1,3,10, 13,14	
D,X	U. M. STEHLING ET AL: "Metallocene/Borate-Catalyzed Copolymerization of 5-N,N-Diisopropylamino-1-pentene with 1-Hexene or 4-Methyl-1-pentene" MACROMOLECULES, vol. 1999, no. 32, 1999, pages 14-20, XP002228560 * page 14 - page 20 *	1,3,10, 12-14	
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D,A	JP 02 051511 A (MITSUI PETROCHEM IND LTD) 21 February 1990 (1990-02-21) & DATABASE WPI Week 199014, 21 February 1990 (1990-02-21) Derwent Publications Ltd., London, GB; AN 1990-102225 * abstract *	1,3, 9-16,22	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 4 September 2003	Examiner Kaumann, E
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.82 (P04C01)



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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X	* the whole document * & DATABASE WPI Week 199137 Derwent Publications Ltd., London, GB; AN 1991-270286 * abstract *	10,13,14	
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X	* the whole document * & DATABASE WPI Week 198947 Derwent Publications Ltd., London, GB; AN 1989-345351 * abstract *	10,13,14	
P,X	EP 1 113 027 A (JSR CORP) 4 July 2001 (2001-07-04) * page 2, line 52 - line 54; claims; tables *	1,3,9, 10,13,14	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 4 September 2003	Examiner Kaumann, E
<div>CATEGORY OF CITED DOCUMENTS</div> <div><div>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</div><div>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</div></div>			

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EPO FORM 1503 03.82 (P4/C01)



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
P,X	HAKALA K ET AL: "SYNTHESIS OF NITROGEN-FUNCTIONALIZED POLYOLEFINS WITH METALLOCENE/METHYLALUMINOXANE CATALYSTS" POLYMER BULLETIN, SPRINGER VERLAG. HEIDELBERG, DE, vol. 46, no. 2/3, 1 April 2001 (2001-04-01), pages 123-130, XP001017502 ISSN: 0170-0839 * page 123 - page 130 * ---	1-3,10, 12-14	
X	WO 95 33806 A (EXXON CHEMICAL PATENTS INC) 14 December 1995 (1995-12-14) * page 6, line 8 - page 13, line 18; claims; examples * ---	6-8,13	
X	WO 99 16851 A (EXXON CHEMICAL PATENTS INC) 8 April 1999 (1999-04-08) * page 9, line 30 - page 34, line 13; claims; examples * ---	6-8,13	
P,A	DE 199 27 347 A (BASF AG) 21 December 2000 (2000-12-21) * the whole document * ---	6-8,13	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 4 September 2003	Examiner Kaumann, E
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.82 (P04C01)



CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1-5,9-12,14-27

Subject-matter of claims 1-5 of the present application is a polar group containing olefin polymer comprising an alpha olefin monomer and a polar group comprising monomer. Subject-matter of claims 9-12 and 14 of the present application is a process for the preparation of these polymers using a catalyst system comprising a transition metal compound and an activator. Further subject-matters of claims 15 - 27 are a thermoplastic resin composition comprising the polymers as claimed previously and different products containing said polymers or said thermoplastic resin composition.

2. Claims: 6-8,13

Subject-matter of claims 6-8 and 13 of the present application are polar monomers containing copolymers comprising monomer units, which are in a subsequent step polymerized with other monomer units according to an anionic, ring - opening or polycondensation process, or which are reacted with a macromonomer, obtained by an anionic, ring - opening or polycondensation process.

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 01 12 0773

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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04-09-2003

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

**ANNEX TO THE EUROPEAN SEARCH REPORT
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